



FCC PART 15B TEST REPORT

No. I22Z60443-EMC01

for

TCL Communication Ltd.

GSM/UMTS/LTE Mobile phone

Model name: 5064A, 5164A

FCC ID: 2ACCJH165

with

Hardware Version: 05

Software Version: vSM55

Issued Date: 2022-03-23

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

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Test Laboratory:

CTTL-Telecommunication Technology Labs, CAICT

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I22Z60443-EMC01	Rev.0	1 st edition	2022-03-23

Note: the latest revision of the test report supersedes all previous version.



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1. Test Laboratory

1.1. Testing Location

CTTL (huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing,
P. R. China 100191

1.2. Testing Environment

Normal Temperature: 15-35°C

Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: 2022-03-08

Testing End Date: 2022-03-21


1.4. Signature



Wang Xue
(Prepared this test report)



Zhang Ying
(Reviewed this test report)



Zhang Xia
(Approved this test report)



2. Client Information

2.1. Applicant Information

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2.2. Manufacturer Information

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3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	GSM/UMTS/LTE Mobile phone
Model Name	5064A, 5164A
FCC ID:	2ACCJH165

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of CTTL, Telecommunication Technology Labs, CAICT.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	356201730001470/ 356201730001488	05	vSM55

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE used during the test

AE ID*	Description	SN	Remarks
AE1	Battery	/	/
AE2	Battery	/	/
AE3	USB Cable	/	/
AE4	USB Cable	/	/
AE5	Charger1	/	/
AE6	Charger2	/	/
AE7	Headset1	/	/
AE8	Headset2	/	/
AE9	Headset3	/	/
AE10	Headset4	/	/

AE1

Model	TLp038DA
Manufacturer	TMB
Capacity	3860mAh
Nominal Voltage	3.85V

AE2

Model	TLp038D7
Manufacturer	VEKEN
Capacity	3860mAh
Nominal Voltage	3.85V

AE3

Model	CDA3122005C1
Manufacturer	JUWEI
Length of cable	/

AE4

Model	CDA3122005C2
Manufacturer	SHENGHUA

Length of cable	/
AE5	
Model	CBA0058AGAC5
Manufacturer	PUAN
Length of cable	/
AE6	
Model	CBA0058AGAC7
Manufacturer	CHENYANG
Length of cable	/
AE7	
Model	CCB0046A10C1
Manufacturer	Juwei
Length of cable	/
AE8	
Model	CCB0046A10C4
Manufacturer	MEIHAO
Length of cable	/
AE9	
Model	CCB0049A10C1
Manufacturer	Juwei
Length of cable	/
AE10	
Model	CCB0046A15C1
Manufacturer	Juwei
Length of cable	/

*AE ID: is used to identify the test sample in the lab internally.

3.4. EUT set-ups

EUT set-up No.	Combination of EUT and AE	Remarks
Set.1	EUT1 + AE1/2 + AE3 + AE5	Charger1 + REAR Camera + GSM 850 idle
Set.2	EUT1 + AE1/2 + AE4+ AE6	Charger1 + MP4 + WCDMA 850 idle
Set.3	EUT1 + AE1/2 + AE3 + AE7	USB + front camera +LTE B5 idle + FM
Set.4	EUT1 + AE1/2 + AE3 + AE8	USB + front camera +LTE B12 idle + FM
Set.5	EUT1 + AE1/2 + AE3 + AE9	USB + front camera +LTE B13 idle + FM

Note:

Equipment Under Test (EUT) is a model of Smart Phone with integrated antenna.

It supports

GSM Band GSM900/DCS1800/PCS1900/GSM850

UMTS Band FDD Band I(W2100)/FDD Band II(W1900) /FDD Band IV(W1700)/FDD Band V(W850)/ FDD VIII(W900)



LTE Band FDD2/FDD3/FDD4/FDD5/FDD7/FDD8/FDD12/FDD13/FDD17/FDD26/
FDD28/TDD38/TDD40/FDD66

It has MP3, Camera, USB memory, FM, Bluetooth 4.2, Wi-Fi (802.11b/g/n, 802.11n supports 20MHz and 40MHz bandwidth) ,GNSS(GPS, GLONASS and GALLILEO) functions

The device contains receivers which tune and operate between 30MHz-960MHz in the following bands: GSM850, WCDMA850, LTE Band 5/8/12/13/17/26/28. All licensed band receivers that tune in the range of 30MHz-960MHz are investigated. Only the worst-case emissions are reported.

4. Reference Documents

4.1. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part 15, Subpart B	Radio frequency devices - Unintentional Radiators	2019
ANSI C63.4	American National Standard for Methods of Measurement of Radio- Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2014

Note: The test methods have no deviation with standards.

5. LABORATORY ENVIRONMENT

Semi-anechoic chamber SAC-1 (10 meters×6.7meters×6.1meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 15 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 M
Ground system resistance	< 4
Normalised site attenuation (NSA)	< ±4 dB, 3m distance
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 6GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 6000 MHz

Shielded room did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz, >60dB; 1MHz—1000MHz, >90dB.
Electrical insulation	> 2 M
Ground system resistance	< 4

6. SUMMARY OF TEST RESULTS

Abbreviations used in this clause:		
Verdict Column	P	Pass
	NA	Not applicable
	F	Fail

Items	Test Name	Clause in FCC rules	Section in this report	Verdict	Test Location
1	Radiated Emission	15.109(a)	B.1	P	CTTL(huayuan North Road)
2	Conducted Emission	15.107(a)	B.2	P	CTTL(huayuan North Road)

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE	CALIBRATION INTERVAL
1	Test Receiver	ESW44	103023	R&S	2022-10-28	1 Year
2	Test Receiver	ESW44	103015	R&S	2022-09-03	1 Year
3	LISN	ENV216	101200	R&S	2022-05-30	1 year
4	Universal Radio Communication Tester	CMW500	116588	R&S	2022-12-20	1 year
5	Test Receiver	ESCI 7	100766	R&S	2022-04-09	1 Year
6	EMI Antenna	VULB 9163	01223	Schwarzbeck	2022-03-22	1 year
7	EMI Antenna	3115	00167250	ETS-Lindgren	2022-07-01	1 year
8	Signal Generator	SMBV100A	260613	R&S	2023-01-09	1 year

ANNEX A: MEASUREMENT RESULTS

A.1 Radiated Emission

Reference

FCC: CFR Part 15.109(a).

A.1.1 Method of measurement

The field strength of radiated emissions from the unintentional radiator (USB mode of MS and charging mode of MS) at distances of 3 meters is tested. Tested in accordance with the procedures of ANSI C63.4 – 2014, section 8.3.

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3/10 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

A.1.2 EUT Operating Mode

The MS is operating in the USB mode and charging mode. During the test MS is connected to a PC via a USB cable in the case of USB mode and is connected to a charger in the case of charging mode.

The EUT was tested while operating in licensed band Rx mode. All licensed band receivers that tune in the range of 30MHz-960MHz, as listed in section 3.4, are investigated. Only the worst case emissions are reported.

All equipment is placed on the test table top and arranged in a typical configuration in accordance with ANSI C63.4-2014 and manipulated to obtain worst case emissions.

The model of the PC is M4000E-17, and the serial number of the PC is M706GWXD. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

Note : I/O information : Printer – USB, Mouse – PS/2, Keyboard – USB.

A.1.3 Measurement Limit

Frequency range (MHz)	Field strength limit ($\mu\text{V}/\text{m}$)		
	Quasi-peak	Average	Peak
30-88	100		
88-216	150		
216-960	200		
960-1000	500		
>1000		500	5000

Note: the above limit is for 3 meters test distance. 10 meters' limit is got by converting.

A.1.4 Test Condition

Frequency range (MHz)	RBW/VBW	Sweep Time (s)	Detector
30-1000	120kHz (IF Bandwidth)	5	Peak/Quasi-peak
Above 1000	1MHz/3MHz	15	Peak, Average

A.1.5 Measurement Results

A "reference path loss" is established and the A_{Rpl} is the attenuation of "reference path loss". It includes the antenna factor of receive antenna and the path loss.

The measurement results are obtained as described below:

$$\text{Result} = P_{\text{Mea}} + A_{\text{Rpl}} = P_{\text{Mea}} + G_A + G_{\text{PL}}$$

Where

G_A : Antenna factor of receive antenna

G_{PL} : Path Loss

P_{Mea} : Measurement result on receiver.

Measurement uncertainty (worst case): $U = 4.74 \text{ dB}$, $k=2$.

Measurement results for Set.1:

Charing Mode/Average detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17619.200	41.00	-29.52	45.25	25.27	54.00	13.00	H
17942.200	40.90	-28.94	46.66	23.18	54.00	13.10	H
17953.080	40.90	-28.94	46.66	23.18	54.00	13.10	H
17979.600	40.90	-29.06	46.66	23.30	54.00	13.10	H
17958.520	40.90	-28.94	46.66	23.18	54.00	13.10	V
17603.560	40.80	-29.52	45.25	25.07	54.00	13.20	H

Charging Mode/Peak detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17955.460	52.70	-28.94	46.66	34.98	74.00	21.30	H
17768.800	52.70	-29.63	45.95	36.37	74.00	21.30	H
17729.020	52.60	-29.67	45.25	37.02	74.00	21.40	V
17505.300	52.40	-29.26	44.35	37.30	74.00	21.60	V
17795.320	52.30	-29.89	45.95	36.23	74.00	21.70	V
17145.240	52.10	-29.88	42.36	39.61	74.00	21.90	V

Measurement results for Set.2:
Charing Mode/Average detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
9690.060	42.30	-36.33	37.97	40.66	54.00	11.70	H
9689.720	40.70	-36.33	37.97	39.06	54.00	13.30	H
17955.800	40.20	-28.94	46.66	22.48	54.00	13.80	H
17883.720	40.00	-29.53	45.95	23.58	54.00	14.00	V
17975.180	40.00	-29.06	46.66	22.40	54.00	14.00	H
17963.280	39.90	-29.06	46.66	22.30	54.00	14.10	V

Charging Mode/Peak detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17977.9	52.00	-29.06	46.66	34.40	74.00	22.00	H
17435.3	51.40	-29.71	44.35	36.76	74.00	22.60	H
17993.9	51.20	-29.06	46.66	33.60	74.00	22.80	V
17797.4	51.20	-29.89	45.95	35.13	74.00	22.80	H
17845.3	51.20	-29.34	45.95	34.58	74.00	22.80	V
17997.6	51.10	-29.06	46.66	33.50	74.00	22.90	V

Measurement results for Set.3:
USB Mode/Average detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17955.120	40.10	-28.94	46.66	22.38	54.00	13.90	V
17987.760	40.00	-29.06	46.66	22.40	54.00	14.00	V
17956.140	40.00	-28.94	46.66	22.28	54.00	14.00	H
17967.700	39.90	-29.06	46.66	22.30	54.00	14.10	H
17976.200	39.80	-29.06	46.66	22.20	54.00	14.20	V
17915.680	39.80	-29.33	46.66	22.47	54.00	14.20	H

USB Mode/Peak detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17368.280	51.60	-29.97	43.36	38.21	74.00	22.40	V
17989.120	51.50	-29.06	46.66	33.90	74.00	22.50	V
17963.960	51.30	-29.06	46.66	33.70	74.00	22.70	H
17879.300	51.20	-29.39	45.95	34.64	74.00	22.80	V
17981.300	51.00	-29.06	46.66	33.40	74.00	23.00	V
17777.640	51.00	-29.63	45.95	34.67	74.00	23.00	H

Measurement results for Set.4:
USB Mode/Average detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17955.460	40.20	-28.94	46.66	22.48	54.00	13.80	V
17979.940	39.80	-29.06	46.66	22.20	54.00	14.20	V
17855.840	39.80	-29.34	45.95	23.18	54.00	14.20	V
17749.760	39.80	-29.61	45.95	23.46	54.00	14.20	H
17972.800	39.70	-29.06	46.66	22.10	54.00	14.30	H
17943.220	39.70	-28.94	46.66	21.98	54.00	14.30	V

USB Mode/Peak detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17936.420	51.60	-29.40	46.66	34.34	74.00	22.40	V
17924.520	51.30	-29.40	46.66	34.04	74.00	22.70	V
17719.160	51.20	-29.73	45.25	35.69	74.00	22.80	H
17967.700	51.10	-29.06	46.66	33.50	74.00	22.90	H
17933.700	51.10	-29.40	46.66	33.84	74.00	22.90	V
17940.500	51.10	-28.94	46.66	33.38	74.00	22.90	H

Measurement results for Set.5:
USB Mode/Average detector

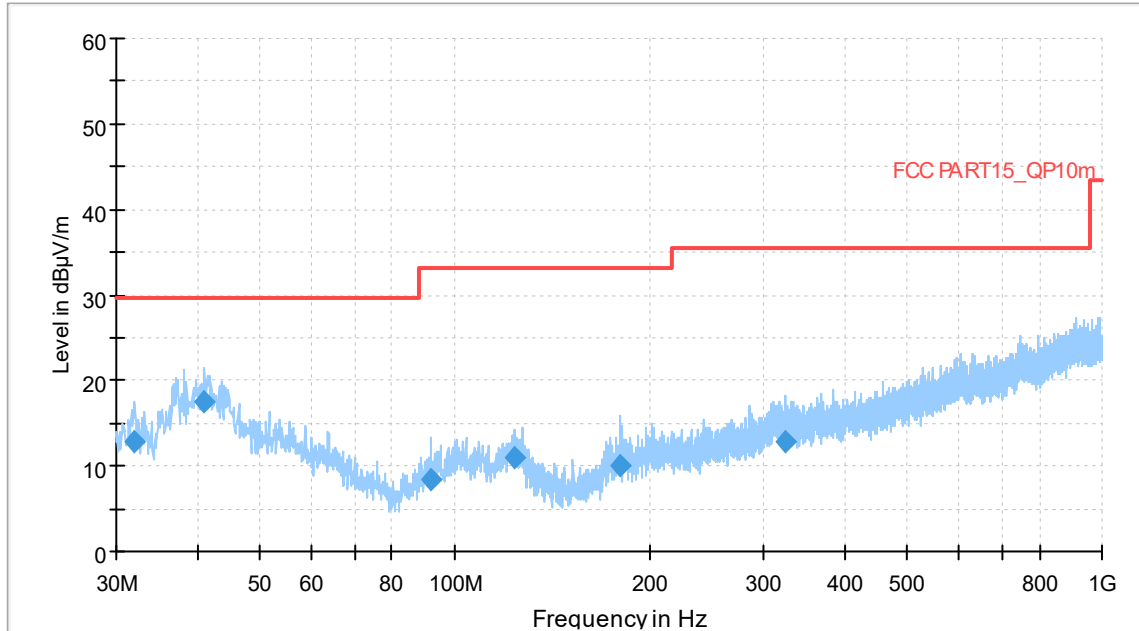
Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17874.540	39.70	-29.39	45.95	23.14	54.00	14.30	H
17981.980	39.70	-29.06	46.66	22.10	54.00	14.30	H
17938.460	39.60	-29.40	46.66	22.34	54.00	14.40	H
17994.220	39.60	-29.06	46.66	22.00	54.00	14.40	H
17972.460	39.60	-29.06	46.66	22.00	54.00	14.40	H
17966.340	39.60	-29.06	46.66	22.00	54.00	14.40	V

USB Mode/Peak detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17634.500	51.10	-29.40	45.25	35.25	74.00	22.90	H
17568.200	51.10	-29.79	45.25	35.65	74.00	22.90	H
17947.980	51.10	-28.94	46.66	33.38	74.00	22.90	V
17952.400	50.90	-28.94	46.66	33.18	74.00	23.10	V
17242.480	50.90	-30.02	43.36	37.56	74.00	23.10	H
17767.100	50.80	-29.63	45.95	34.47	74.00	23.20	H

Measurement results for Set.1:

Full Spectrum

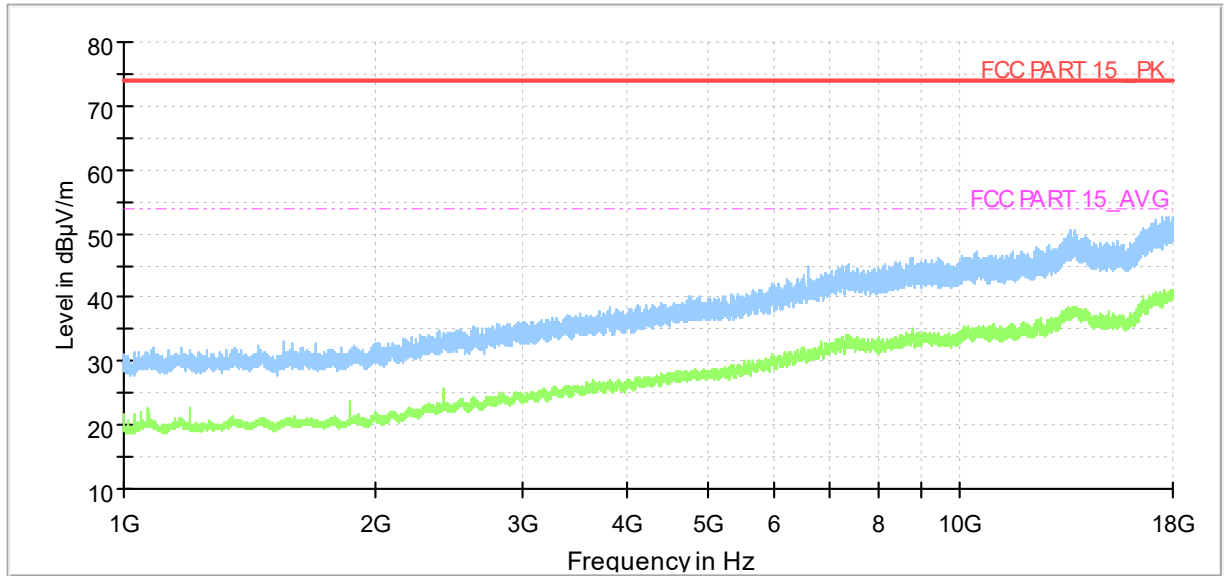


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- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART15_QP10m [..]
- ◆ Final_Result QPK [Final_Result.Result:4]

Fig A.1 Radiated Emission from 30MHz to 1GHz
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
32.037000	12.93	29.54	16.61	2000.0	120.000	283.0	V	30.0
41.058000	17.57	29.54	11.97	2000.0	120.000	125.0	V	120.0
91.789000	8.31	33.06	24.75	2000.0	120.000	125.0	V	30.0
123.411000	10.94	33.06	22.12	2000.0	120.000	225.0	V	-28.0
180.059000	9.97	33.06	23.09	2000.0	120.000	125.0	V	-29.0
323.328000	12.90	35.56	22.66	2000.0	120.000	125.0	H	120.0

Full Spectrum

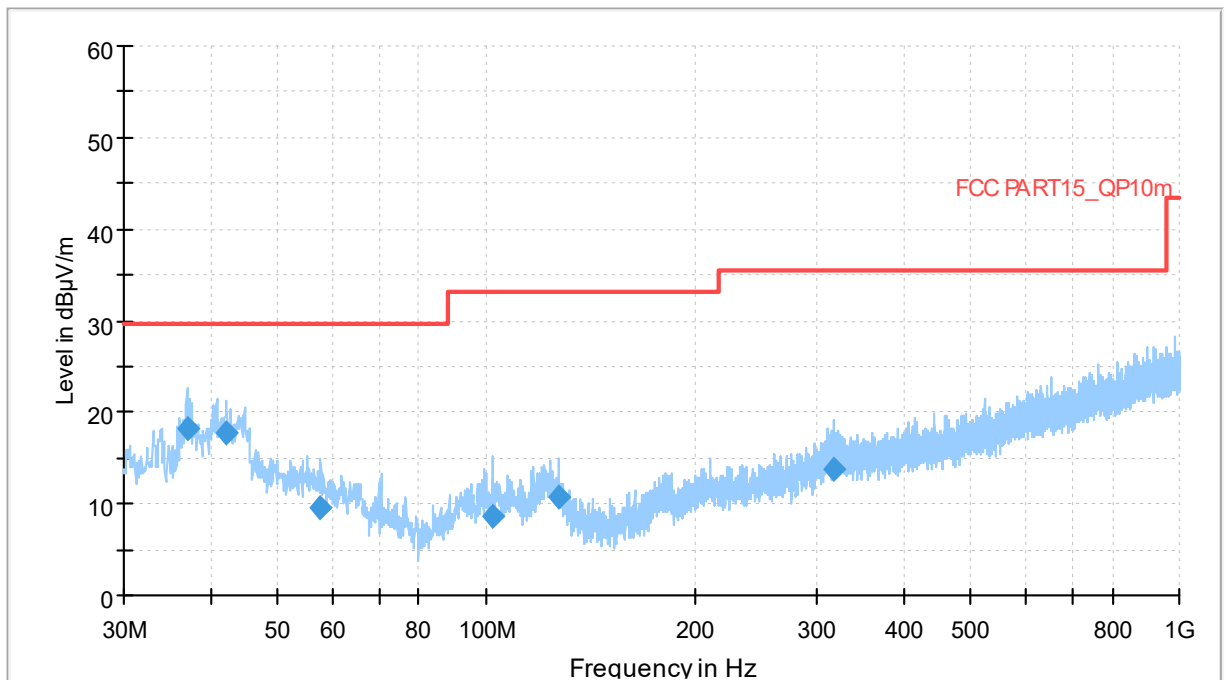


- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs AVG [Critical_Freqs.Result:5]
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- - - FCC PART 15_AVG [..]
- ◆ Final_Result PK+ [Final_Result.Result:4]
- ◆ Final_Result AVG [Final_Result.Result:5]

Fig A.2 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.2:

Full Spectrum

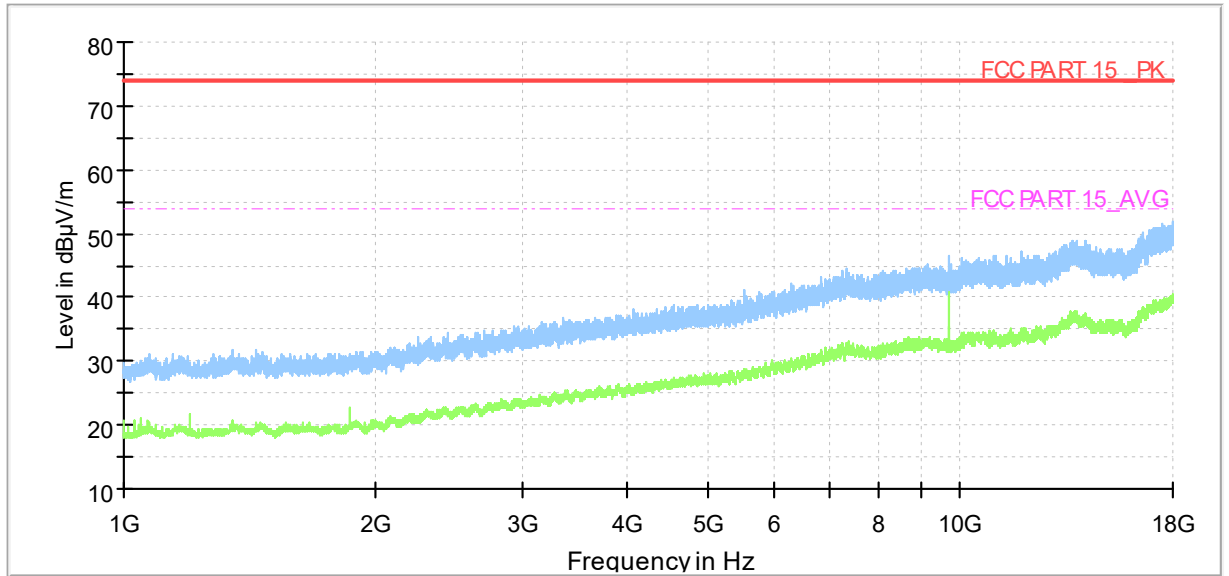


- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART15_QP10m [..]
- ◆ Final_Result QPK [Final_Result.Result:4]

Fig A.3 Radiated Emission from 30MHz to 1GHz
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
36.984000	18.21	29.54	11.33	2000.0	120.000	95.0	V	210.0
42.125000	17.84	29.54	11.70	2000.0	120.000	225.0	V	30.0
57.742000	9.47	29.54	20.07	2000.0	120.000	375.0	V	150.0
101.974000	8.62	33.06	24.44	2000.0	120.000	175.0	V	190.0
127.000000	10.63	33.06	22.43	2000.0	120.000	103.0	V	-28.0
317.896000	13.79	35.56	21.77	2000.0	120.000	225.0	H	120.0

Full Spectrum

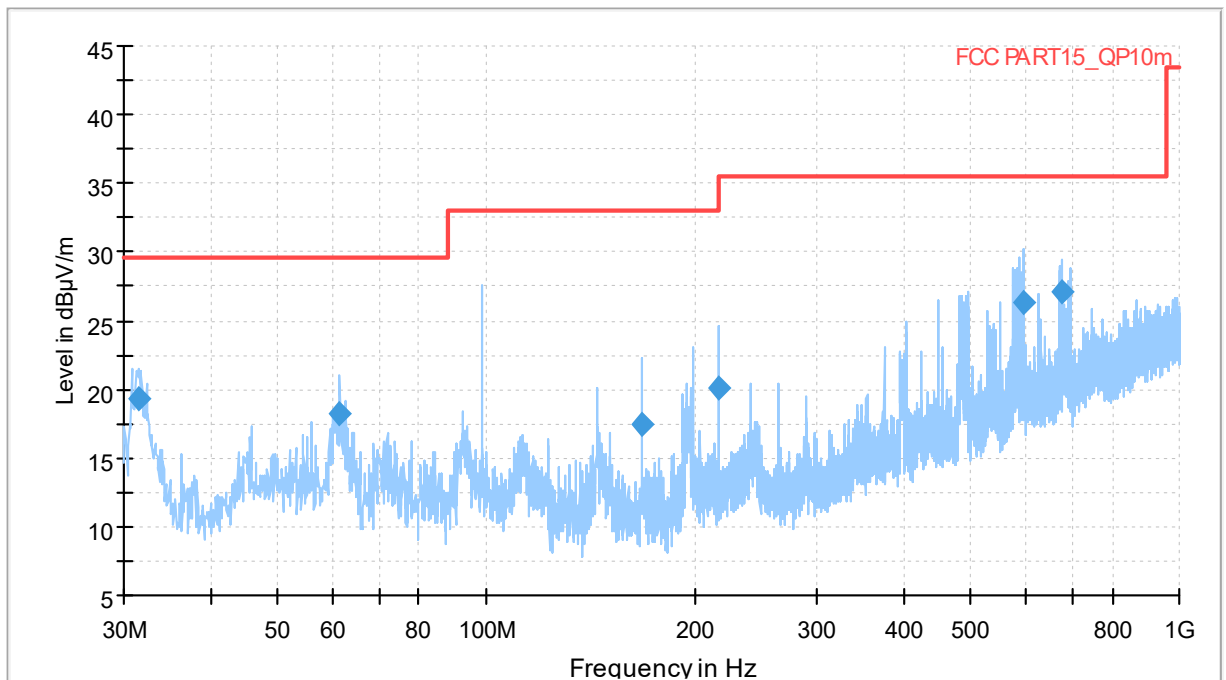


- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs AVG [Critical_Freqs.Result:5]
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- - - FCC PART 15_AVG [..]
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Fig A.4 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.3:

Full Spectrum

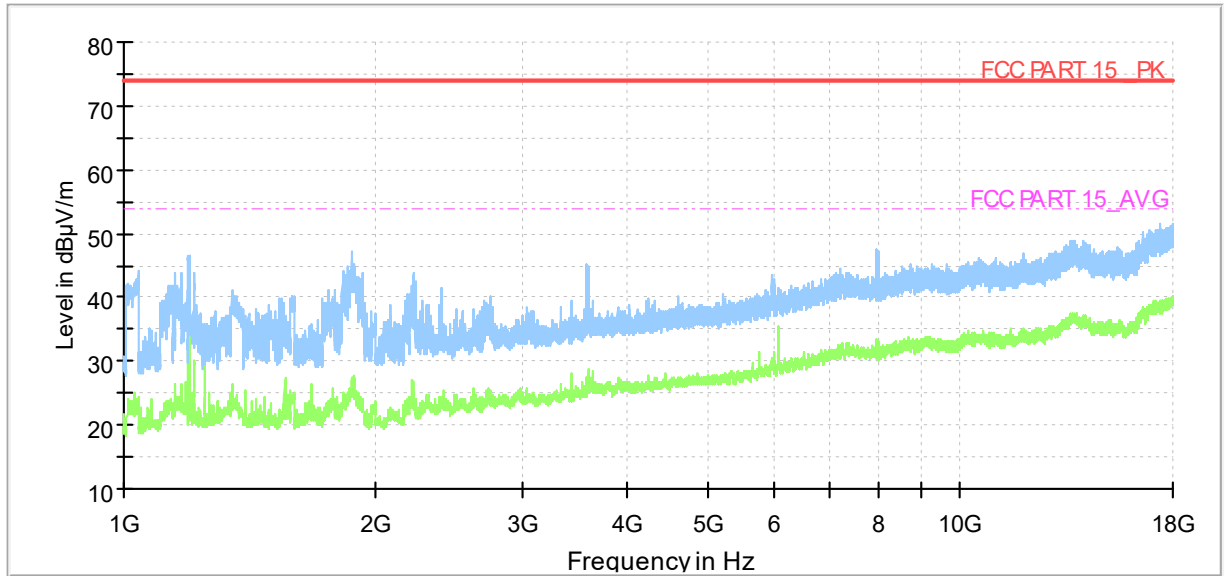


- Preview Result 1-PK+ [Preview_Result.Result:1]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART15_QP10m [..]
- ◆ Final_Result QPK [Final_Result.Result:4]

Fig A.5 Radiated Emission from 30MHz to 1GHz
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
31.552000	19.34	29.54	10.20	2000.0	120.000	125.0	V	61.0
61.525000	18.19	29.54	11.35	2000.0	120.000	225.0	V	265.0
167.934000	17.43	33.06	15.63	2000.0	120.000	103.0	V	152.0
215.949000	20.03	33.06	13.03	2000.0	120.000	95.0	V	172.0
595.801000	26.38	35.56	9.18	2000.0	120.000	203.0	V	-9.0
675.050000	27.14	35.56	8.42	2000.0	120.000	175.0	V	-30.0

Full Spectrum

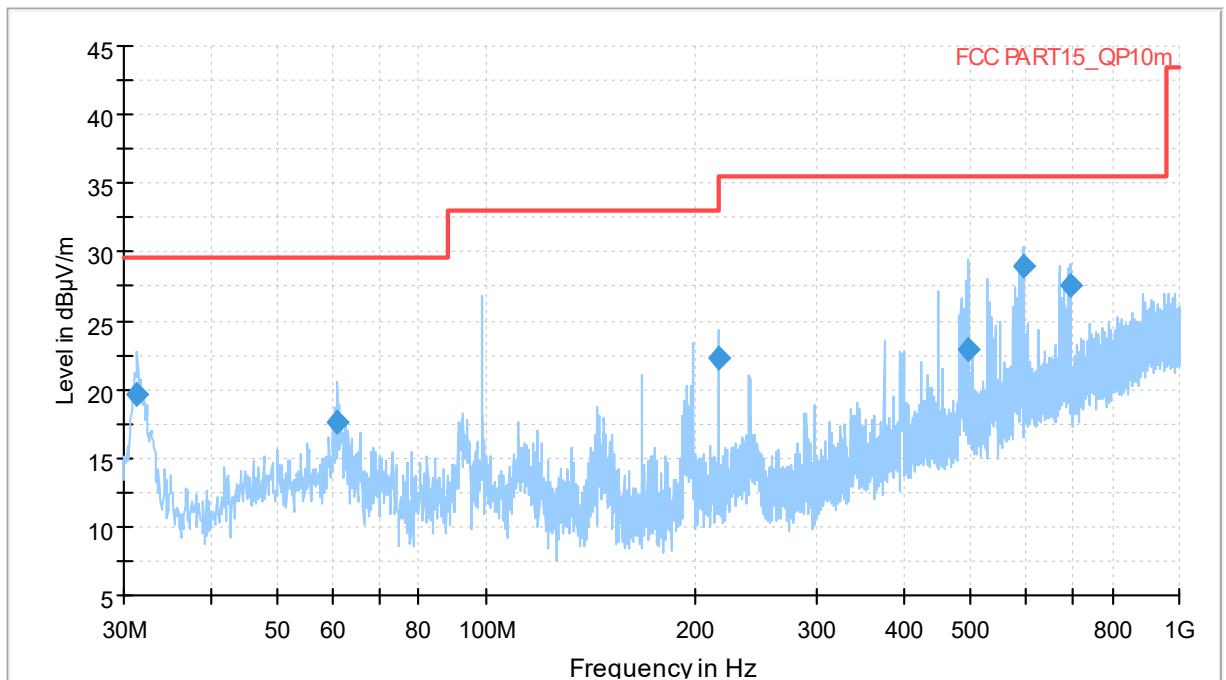


- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs AVG [Critical_Freqs.Result:5]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART 15_PK [..]
- - - FCC PART 15_AVG [..]
- ◆ Final_Result PK+ [Final_Result.Result:4]
- ◆ Final_Result AVG [Final_Result.Result:5]

Fig A.6 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.4:

Full Spectrum

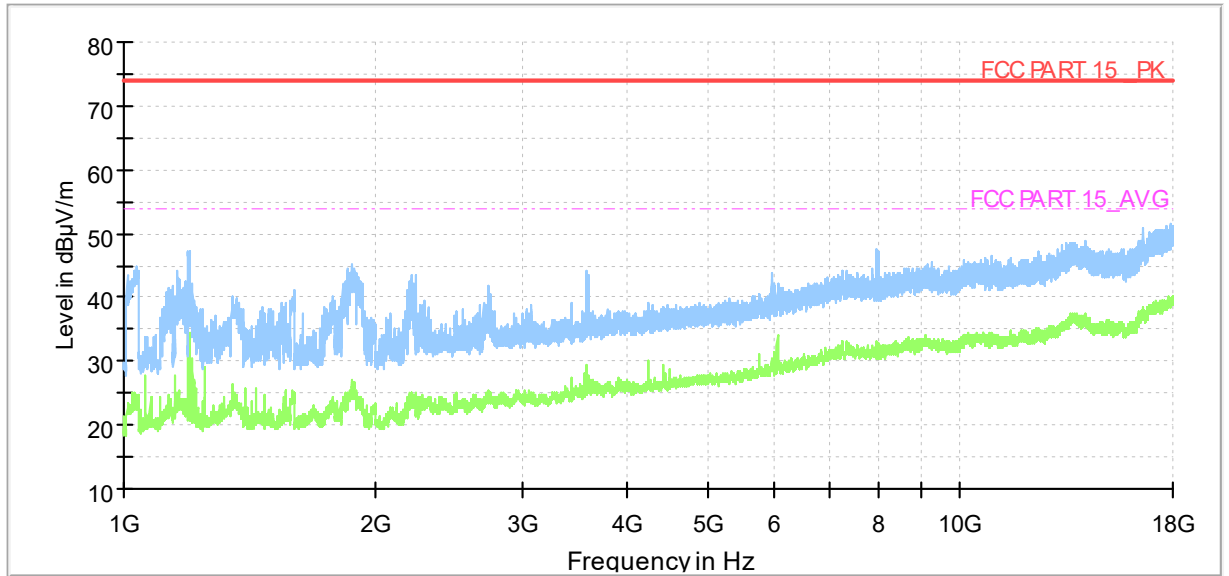


- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART15_QP10m [..]
- ◆ Final_Result QPK [Final_Result.Result:4]

Fig A.7 Radiated Emission from 30MHz to 1GHz
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
31.358000	19.64	29.54	9.90	2000.0	120.000	175.0	V	242.0
61.137000	17.66	29.54	11.88	2000.0	120.000	225.0	V	300.0
215.949000	22.22	33.06	10.84	2000.0	120.000	175.0	V	-28.0
496.473000	22.95	35.56	12.61	2000.0	120.000	275.0	V	-9.0
595.219000	29.00	35.56	6.56	2000.0	120.000	202.0	V	-7.0
694.644000	27.61	35.56	7.95	2000.0	120.000	183.0	V	-28.0

Full Spectrum

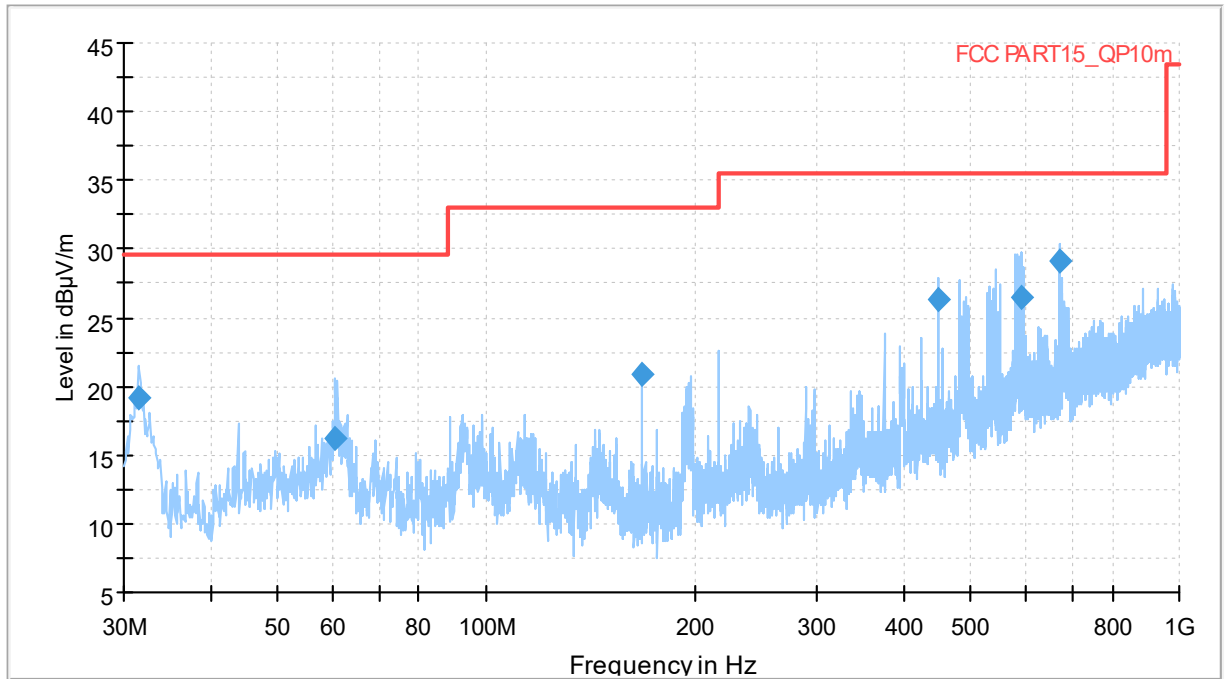


- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs AVG [Critical_Freqs.Result:5]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART 15_PK [..]
- - - FCC PART 15_AVG [..]
- ◆ Final_Result PK+ [Final_Result.Result:4]
- ◆ Final_Result AVG [Final_Result.Result:5]

Fig A.8 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.5:

Full Spectrum

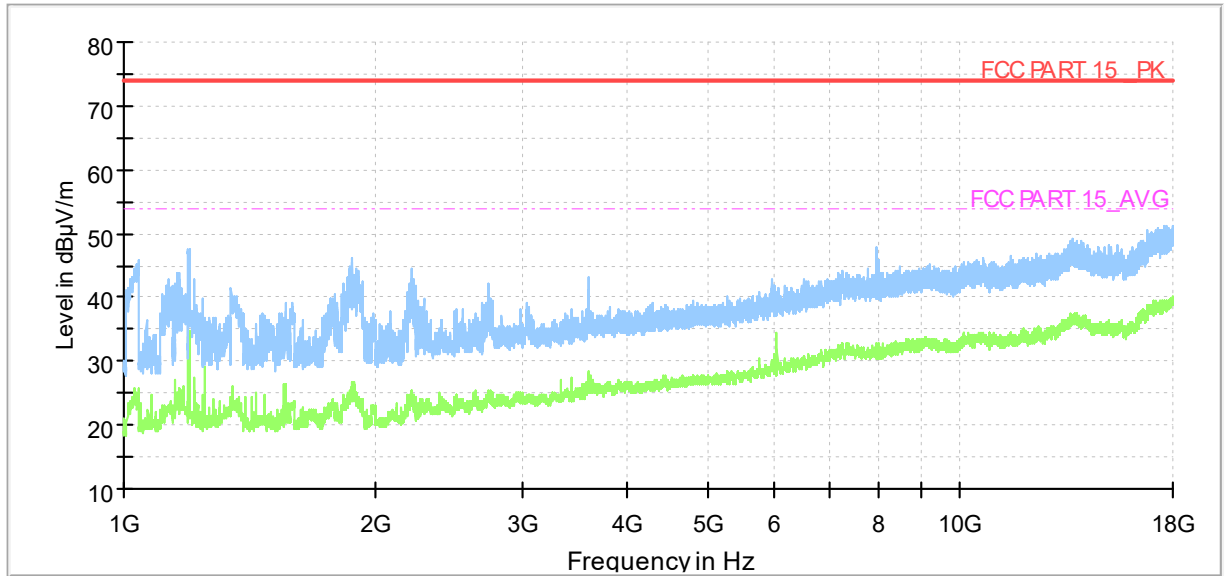


- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART15_QP10m [..]
- ◆ Final_Result QPK [Final_Result.Result:4]

Fig A.9 Radiated Emission from 30MHz to 1GHz
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
31.455000	19.10	29.54	10.44	2000.0	120.000	302.0	V	189.0
60.555000	16.13	29.54	13.41	2000.0	120.000	95.0	V	120.0
168.031000	20.87	33.06	12.19	2000.0	120.000	95.0	V	152.0
450.010000	26.35	35.56	9.21	2000.0	120.000	283.0	V	261.0
591.242000	26.42	35.56	9.14	2000.0	120.000	202.0	V	-10.0
673.207000	29.05	35.56	6.51	2000.0	120.000	175.0	V	-29.0

Full Spectrum



- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs AVG [Critical_Freqs.Result:5]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART 15_PK [..]
- - - FCC PART 15_AVG [..]
- ◆ Final_Result PK+ [Final_Result.Result:4]
- ◆ Final_Result AVG [Final_Result.Result:5]

Fig A.10 Radiated Emission from 1GHz to 18GHz

A.2 Conducted Emission

Reference

FCC: CFR Part 15.107(a).

A.2.1 Method of measurement

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits. Tested in accordance with the procedures of ANSI C63.4 – 2014, section 7.3.

A.2.2 EUT Operating Mode

The MS is operating in the USB mode and charging mode. During the test MS is connected to a PC via a USB cable in the case of USB mode and is connected to a charger in the case of charging mode. The model of the PC is DELL M4000E-17, and the serial number of the PC is M706GWXD. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

Note : I/O information : Printer – USB, Mouse – PS/2, Keyboard – USB.

A.2.3 Measurement Limit

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency

A.2.4 Test Condition in charging mode

Voltage (V)	Frequency (Hz)
120	60

RBW/IF bandwidth	Sweep Time(s)
9kHz	1

A.2.5 Measurement Results

Measurement uncertainty: $U = 3.1 \text{ dB}$, $k=2$.

Charging Mode, Set.1:

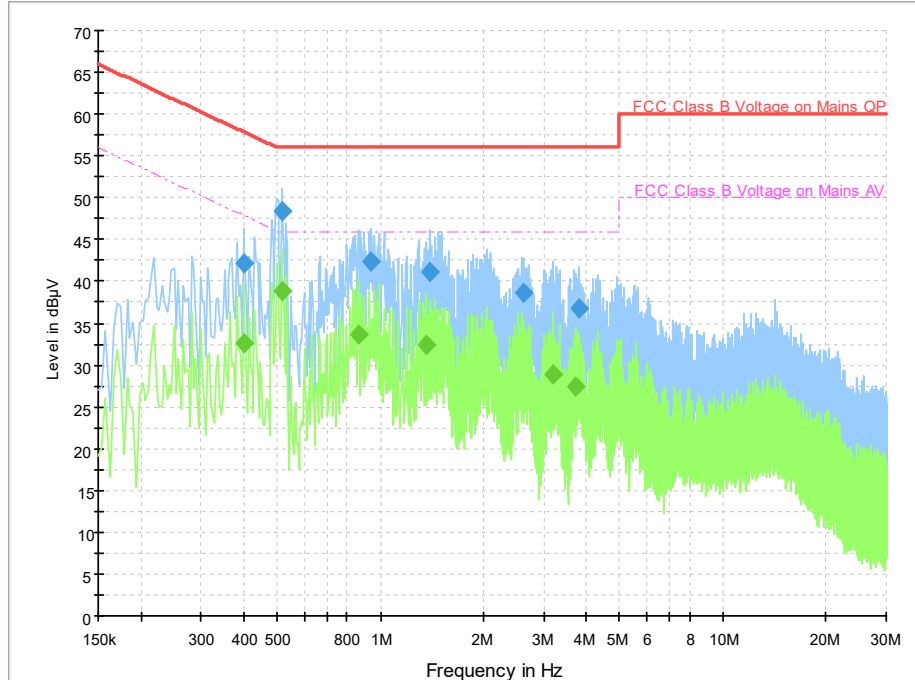


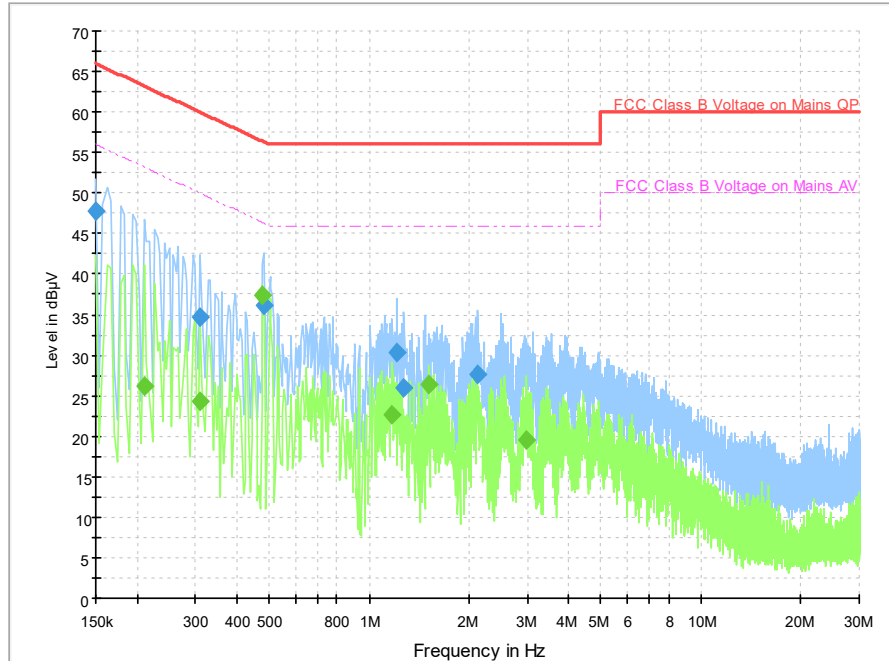
Fig A.11 Conducted Emission from 150kHz to 30MHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.398000	42.2	5000.0	9.000	On	L1	19.9	15.7	57.9	
0.514000	48.5	5000.0	9.000	On	L1	19.9	7.5	56.0	
0.942000	42.5	5000.0	9.000	On	L1	19.6	13.5	56.0	
1.390000	41.0	5000.0	9.000	On	L1	19.5	15.0	56.0	
2.626000	38.6	5000.0	9.000	On	L1	19.5	17.4	56.0	
3.798000	36.8	5000.0	9.000	On	L1	19.5	19.2	56.0	

Final Result 2

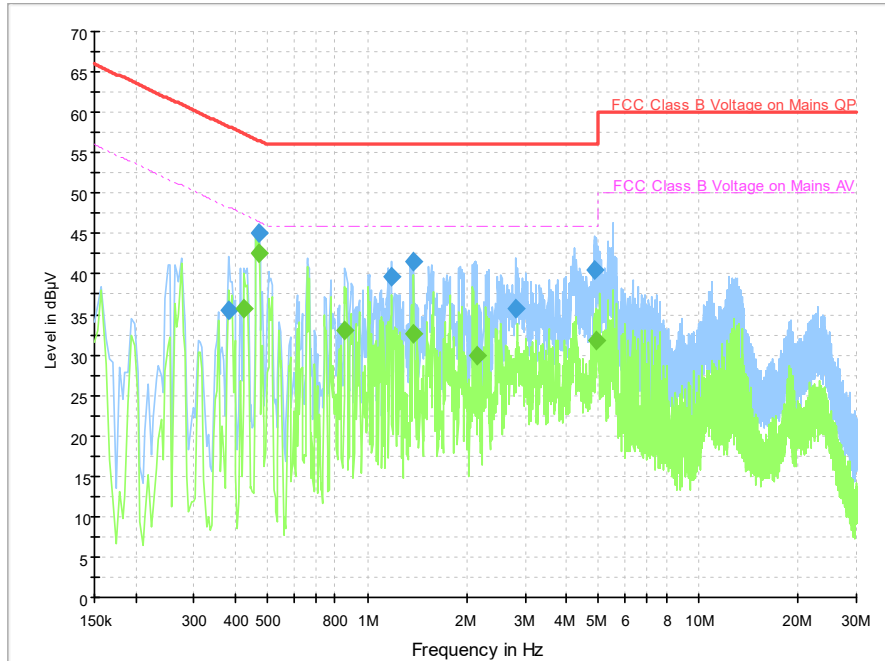
Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.398000	32.7	5000.0	9.000	On	L1	19.9	15.2	47.9	
0.514000	38.8	5000.0	9.000	On	L1	19.9	7.2	46.0	
0.862000	33.6	5000.0	9.000	On	L1	19.6	12.4	46.0	
1.358000	32.4	5000.0	9.000	On	L1	19.5	13.6	46.0	
3.210000	28.8	5000.0	9.000	On	L1	19.5	17.2	46.0	
3.710000	27.3	5000.0	9.000	On	L1	19.5	18.7	46.0	

Charging Mode, Set.2:

Fig A.12 Conducted Emission from 150kHz to 30MHz
Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.150000	47.9	5000.0	9.000	On	N	20.0	18.1	66.0	
0.310000	34.8	5000.0	9.000	On	L1	20.0	25.2	60.0	
0.482000	36.2	5000.0	9.000	On	N	20.0	20.1	56.3	
1.210000	30.4	5000.0	9.000	On	N	19.8	25.6	56.0	
1.274000	26.0	5000.0	9.000	On	N	19.8	30.0	56.0	
2.130000	27.5	5000.0	9.000	On	N	19.8	28.5	56.0	

Final Result 2

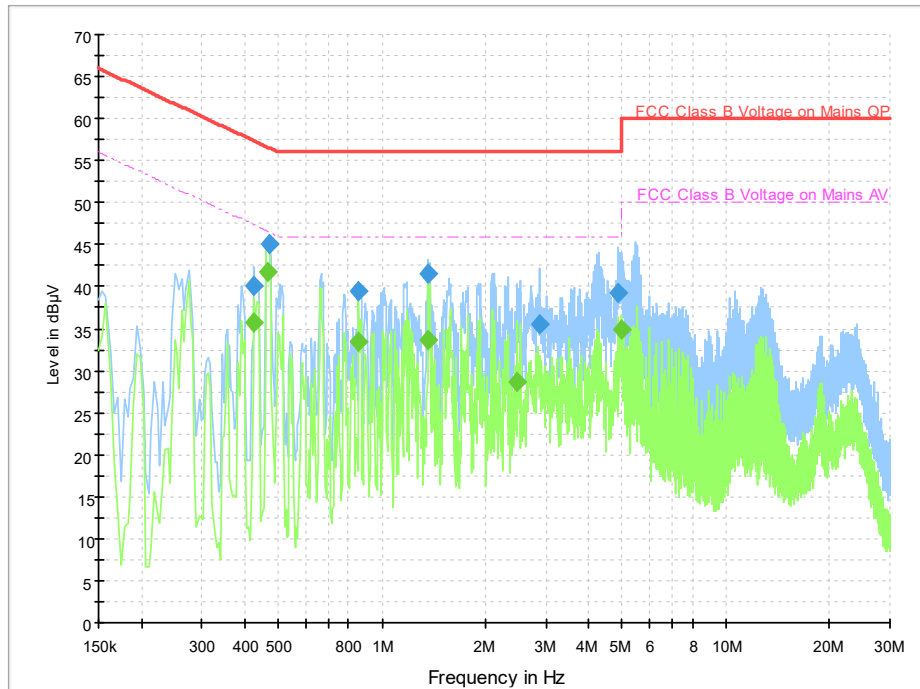
Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.210000	26.3	5000.0	9.000	On	L1	20.0	26.9	53.2	
0.310000	24.4	5000.0	9.000	On	L1	20.0	25.6	50.0	
0.478000	37.4	5000.0	9.000	On	L1	19.9	9.0	46.4	
1.174000	22.6	5000.0	9.000	On	L1	19.5	23.4	46.0	
1.510000	26.5	5000.0	9.000	On	L1	19.5	19.5	46.0	
2.982000	19.6	5000.0	9.000	On	L1	19.5	26.4	46.0	

USB Mode, Set.3:

Fig A.13 Conducted Emission from 150kHz to 30MHz
Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.382000	35.6	5000.0	9.000	On	L1	20.0	22.7	58.2	
0.470000	45.1	5000.0	9.000	On	N	20.0	11.4	56.5	
1.182000	39.7	5000.0	9.000	On	L1	19.5	16.3	56.0	
1.382000	41.6	5000.0	9.000	On	L1	19.5	14.4	56.0	
2.798000	35.6	5000.0	9.000	On	N	19.7	20.4	56.0	
4.874000	40.4	5000.0	9.000	On	N	19.8	15.6	56.0	

Final Result 2

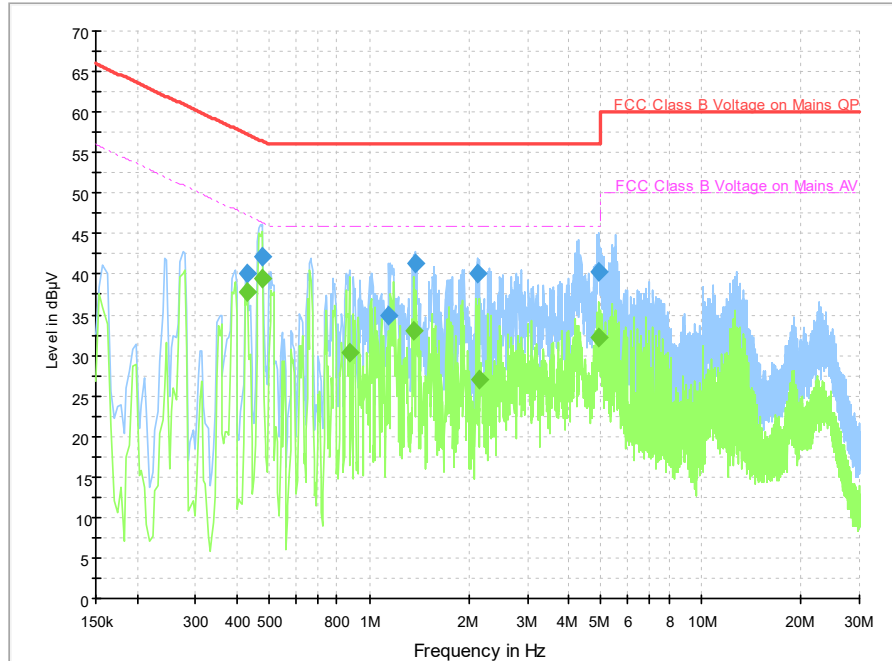
Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.426000	35.6	5000.0	9.000	On	L1	19.9	11.7	47.3	
0.470000	42.6	5000.0	9.000	On	N	20.0	3.9	46.5	
0.854000	32.9	5000.0	9.000	On	N	19.8	13.1	46.0	
1.378000	32.7	5000.0	9.000	On	N	19.8	13.3	46.0	
2.134000	29.9	5000.0	9.000	On	N	19.8	16.1	46.0	
4.906000	31.8	5000.0	9.000	On	N	19.8	14.2	46.0	

USB Mode, Set.4:

Fig A.14 Conducted Emission from 150kHz to 30MHz
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.426000	40.1	5000.0	9.000	On	L1	19.9	17.3	57.3	
0.470000	45.1	5000.0	9.000	On	L1	19.9	11.4	56.5	
0.854000	39.5	5000.0	9.000	On	N	19.8	16.5	56.0	
1.358000	41.6	5000.0	9.000	On	L1	19.5	14.4	56.0	
2.862000	35.5	5000.0	9.000	On	L1	19.5	20.5	56.0	
4.846000	39.3	5000.0	9.000	On	N	19.8	16.7	56.0	

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.426000	35.7	5000.0	9.000	On	N	19.9	11.6	47.3	
0.466000	41.7	5000.0	9.000	On	L1	19.9	4.9	46.6	
0.854000	33.5	5000.0	9.000	On	N	19.8	12.5	46.0	
1.358000	33.7	5000.0	9.000	On	L1	19.5	12.3	46.0	
2.474000	28.6	5000.0	9.000	On	N	19.7	17.4	46.0	
4.950000	35.0	5000.0	9.000	On	N	19.7	11.0	46.0	

USB Mode, Set.5:

Fig A.15 Conducted Emission from 150kHz to 30MHz
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.430000	40.0	5000.0	9.000	On	L1	19.9	17.3	57.3	
0.478000	42.2	5000.0	9.000	On	L1	19.9	14.2	56.4	
1.146000	35.0	5000.0	9.000	On	L1	19.5	21.0	56.0	
1.370000	41.2	5000.0	9.000	On	N	19.8	14.8	56.0	
2.122000	40.0	5000.0	9.000	On	N	19.8	16.0	56.0	
4.910000	40.3	5000.0	9.000	On	N	19.8	15.7	56.0	

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.430000	37.8	5000.0	9.000	On	L1	19.9	9.4	47.3	
0.474000	39.6	5000.0	9.000	On	N	20.0	6.9	46.4	
0.870000	30.3	5000.0	9.000	On	N	19.8	15.7	46.0	
1.362000	32.9	5000.0	9.000	On	L1	19.5	13.1	46.0	
2.138000	27.0	5000.0	9.000	On	N	19.8	19.0	46.0	
4.910000	32.1	5000.0	9.000	On	N	19.8	13.9	46.0	

END OF REPORT